

NREL's Small Turbine Testing Program



**Small Wind Turbine
Testing Workshop**

Hal Link

11-12 September 2008

Small Turbine Independent Testing Project – Major Elements

- Build a testing capability – Staff, facilities, quality system, infrastructure
- Procure and test turbines – Subcontracting, test-specific hardware, test plans, installation, testing, reporting

Build a Testing Capability

Personnel – Experience in wind turbine technology, general testing, quality procedure, and tests specific to this project

Test Facilities – Test sites with good wind fetch, electrical infrastructure, met towers, ethernet

Equipment – Instrumentation, mounting brackets, wiring, data acquisition hardware

Build a Testing Capability (cont)

Test Methods – IEC and AWEA standards
supplemented by project requirements

Quality System – Document what you do and
do what your documents say you do

Measurement Traceability – quality instruments
with current calibrations from competent
calibration labs

Assuring Quality Results – Round Robin testing

Procure and Test Turbines

Write and execute subcontracts – unbelievable government red tape!

Preparation for testing – select, checkout and install instruments, write test plans, and safe operating procedures, install foundations, provide electrical interfaces

Install turbines – receive components, schedule cranes/crews/mfgr's representative, lift tower and turbine, connect electrical and controls, commissioning, pre-test inspection

Procure and Test Turbines (cont)

Testing - Duration, Safety and Function, Power Performance, Acoustic Noise, Power Quality

Post-test inspection, in-situ visual, controller heat imaging, in-shop disassembly, post test calibration of anemometers

Reporting – Set up web site, public and internal progress reports, test reports, summary project report

Disposition of equipment – rebuild and reinstall or dispose, clear test site,